



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/577,634

04/28/2006

Anja Kliewe

4938/PCT

9651

21553 7590 02/23/2009
FASSE PATENT ATTORNEYS, P.A.
P.O. BOX 726
HAMPDEN, ME 04444-0726

EXAMINER

BALDWIN, GORDON

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

02/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,634	Applicant(s) KLIEWE, ANJA	
	Examiner GORDON R. BALDWIN	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 40-61 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In particular, the specification in no way discloses how the article is actually made. Therefore, as the specification fails to teach the subject matter of the claims, undue experimentation is necessary to practice the claimed invention. See MPEP 2164.01(a).

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;

- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;
- (G) The existence of working examples; and
- (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)

(reversing the PTO's determination that claims directed to methods for detection of hepatitis B surface antigens did not satisfy the enablement requirement). In *Wands*, the court noted that there was no disagreement as to the facts, but merely a disagreement as to the interpretation of the data and the conclusion to be made from the facts. *In re Wands*, 858 F.2d at 736-40, 8 USPQ2d at 1403-07. The Court held that the specification was enabling with respect to the claims at issue and found that "there was considerable direction and guidance" in the specification; there was "a high level of skill in the art at the time the application was filed;" and "all of the methods needed to practice the invention were well known." 858 F.2d at 740, 8 USPQ2d at 1406. After considering all the factors related to the enablement issue, the court concluded that "it would not require undue experimentation to obtain antibodies needed to practice the claimed invention." *Id.*, 8 USPQ2d at 1407.

The factors described above have been considered as follows:

(D) *The level of one of ordinary skill*: As will be shown below, it is well known that the platinum added to the surface of the superalloy layer will diffuse into the surface of the nickel based alloy to a variety of depths depending on the amount platinum applied

Art Unit: 1794

to the surface of the substrate and/or the time the heat is applied to the structure and/or any pre-treatments to the nickel-based substrate or the structure as a whole.

(F) *The amount of direction provided by the inventor:* The Applicant does not disclose any ranges for the amount (or thicknesses) of platinum added to the nickel-based substrate prior to the platinum diffusing into the surface of the nickel-based substrate. Additionally, the Applicant does not provide temperature ranges for the heat treatment of the nickel-based turbine blade and platinum coating structure.

(G) *The existence of working examples:* There are no working examples given by the Applicant.

(H) *The quantity of experimentation needed to make or use the invention based on the content of the disclosure:* There is considered to be a great deal of experimentation needed to make use of the article in the specification and the claim limitations. While there is an equation for the way the platinum acts while diffusing into the platinum integrated portions of the nickel-based substrate, there are no amounts or heat treatment parameters that would give any teaching on the way to produce such a product. The Applicant is claiming a very particular structure with specific depths and without any examples or teaching of a method of making this article it is not understood how this article will arrive at these very particular platinum percentages without undue experimentation.

In weighing the above stated factors, it is the Examiner's position that undue experimentation is required to produce the claimed invention. Accordingly, even though

Art Unit: 1794

the statute does not use the term “undue experimentation,” it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. In re Wands, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988). See also United States v. Teletronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) (“The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.”). It is therefore concluded that the scope of the claims are not enabled by Applicant’s disclosure.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 40, 46, 48-54, 56-59 and 61 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rickerby (EP 1094131).

Considering claims 40, 46, 48-50, 53, Rickerby discloses a corrosion protective coating (22) for the root of a turbine blade (10) comprising a platinum rich outer layer (24). (Abstract) Rickerby discloses that the blade (or substrate) is a nickel-based super-alloy with an aluminum percentage of 5.6wt%. (Para. 41 and 58) The protective layer of preferably platinum (in Rickerby) is diffused into the surface (by a variety of methods) of the nickel-based alloy. (Para. 39, 42 and 43)

Regarding the integrated portion of the surface region, this limitation is considered to claim that the platinum content in the surface region of 0-5µm in depth from the surface of the substrate is to be between 5-40 weight percent platinum. Then at the maximum depth, the platinum is to be diminished to 5 weight percent.

Rickerby discloses that the Pt layer can be coated in a thickness of 2-12 micrometers. (Para. 37) Given the percentages and thicknesses of paragraphs 43 and 44, it seems as though the thickness of the Pt layer is comparable to the depth to which

Art Unit: 1794

the Pt diffuses into the substrate surface. Therefore, with a 7 μm layer the diffusion is between 25-30 μm deep and with 4 μm the Pt diffusion is 12-15 μm deep. (Para. 43)

So if 2 μm of Pt is deposited on the surface of the substrate (as disclosed in the range shown in Para. 27) then the Pt diffusion should be in the range of 6-7.5 μm deep (in the substrate). In light of the outer, intermediate and inner zones disclosed by Rickerby (Para. 45), the Pt% in the Pt enriched layer (considered to be the integration proportion) is considered to fall into the 5-40wt% in the claimed 0-5 μm from the surface of the nickel based substrate. This is because, if only 2 μm of Pt (Para. 37) are diffused into the surface of the substrate, then the maximum depth is only going to be in the range of 6-8 μm . Therefore, even if the outer zone (with 45% Pt) extends 50% of the length of the maximum total diffusion depth (4 μm), the intermediate zone, which contains 30-45% Pt would still fall within the 5 μm (as required in the claim limitation of claim 1). Therefore, the disclosure of Rickerby is considered to disclose a percentage of Pt falling within the range claimed by the Applicant.

However, in the alternative, if the disclosure of Rickerby is not considered to anticipate the claimed Pt% in the depth claimed by the Applicant, then the limitation of claim 40 is considered to be obvious to a person of ordinary skill in the art at the time of the invention. A person of ordinary skill in the art would consider the disclosure of "about 45% Pt" in the outer zone of the Pt enriched layer (in Rickerby) to be so substantially close to the claimed 40% that there would be no patentable distinction between the prior art of Rickerby and the claimed invention.

It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. In re Best, 195 USPQ 430, 433 (CCPA 1977), In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The **prima facie** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. In re Best, 195 USPQ 430, 433 (CCPA 1977).

Since there is no discernable difference in the method of making the claimed invention from the disclosure of Rickerby, the claim limitations are considered to be obvious to a person of ordinary skill in the art at the time of the invention.

Considering claims 51-52, Rickerby discloses that the Pt enriched layer is preferably platinum. (Para. 42) Since Pt is the only item disclosed to be deposited on the substrate in paragraph 39, then deposition is considered to be exclusively Pt. (Para. 39)

Considering claim 54, while the final product of Rickerby may disclose an alumina coating on the exterior of the Pt enriched coating, the intermediate product where the Pt enriched layer is added and diffused into the nickel based substrate surface (as disclosed in paragraphs 37-47) does not have an aluminized layer on it until the oxide layer forms. (Para. 61) Since this oxide layer has not formed until later in the

Art Unit: 1794

process of manufacture, the article as claimed by the Applicant is considered to exist with no oxide layer and therefore no aluminized layer.

Considering claims 56-58, as disclosed in the rejection of claim 40 (above), Rickerby discloses the requisite amounts of aluminum and nickel in addition to the disclosure of diffusing platinum into the nickel-based substrate. The protective layer of preferably platinum (in Rickerby) is diffused into the surface (by a variety of methods) of the nickel-based alloy. (Para. 39, 42 and 43)

However, claim 56 is considered to claim a protective layer that extends from the surface of the substrate to a point where the platinum content reaches 5 weight percent in the substrate surface. Specifically, the Applicant considers the area where the platinum content is from 5-40 weight percent the integrated proportion. The Applicant is not considered to claim a particular depth at which the 40 weight percent Pt is to begin, nor does the Applicant claim exactly where the platinum content decreases to 5 weight percent.

Therefore, the disclosure of Rickerby which states that the Pt content begins with about 45% Pt in the outer zone and continues downward to a range of 10-25wt% in the inner zone is considered to cross the claimed ranges of 40 wt%, 30wt% and 17.99wt% of Pt. (Para. 45) While Rickerby may not specifically disclose that the platinum weight percentage goes down to 5 weight percent, Rickerby is merely defining what is to be considered a platinum enriched zone, which is down to 10wt%. Below this weight percentage, the diffused layer is not considered to be a platinum enriched layer in

Art Unit: 1794

Rickerby. However, the platinum content in the substrate will eventually reach 0wt% the further it diffuses away from the surface of the substrate if its content is measured deep enough into the substrate surface.

Considering claim 59, Rickerby discloses that the Pt enriched layer is preferably platinum. (Para. 42) Since Pt is the only item disclosed to be deposited on the substrate in paragraph 39, then deposition is considered to be exclusively Pt. (Para. 39)

Considering claim 61, while the final product of Rickerby may disclose an alumina coating on the exterior of the Pt enriched coating, the intermediate product where the Pt enriched layer is added and diffused into the nickel based substrate surface (as disclosed in paragraphs 37-47) does not have an aluminized layer on it until the oxide layer forms. (Para. 61) Since this oxide layer has not formed until later in the process of manufacture, the article as claimed by the Applicant is considered to exist with no oxide layer and therefore no aluminized layer.

Claims 40, 46-53 and 56-57 and 59 are rejected under 35 U.S.C. 103(a) as obvious over Schaeffer (U.S. Pat. No. 6,066,405).

Considering claims 40, 46, 48-50, 56 and 57, Schaeffer discloses a gas turbine engine blade or turbine vane with a nickel-based substrate (32) with aluminum content preferably in the range of 6-7 weight percent. (Col. 3, lines 14-20 and 47-57) Schaeffer also discloses that a layer of platinum is diffused on the surface of the substrate by a

Art Unit: 1794

variety of deposition methods to a depth approximately 7.62 μ m thick. (Col. 4 lines 34-46)

Regarding the integrated portion of the of the surface region, this limitation is considered to claim that the platinum content in the surface region of 0-5 μ m in depth from the surface of the substrate is to be between 5-40 weight percent platinum. Then at the maximum depth, the platinum is to be diminished to 5 weight percent.

Schaeffer discloses that the Pt% in the integrated region is from about 18-45% Pt. (Col. 5 lines 46-60). This integration region is disclosed to be 63.5 μ m thick. (Col. 5 lines 62-65) By this disclosure, the percentage of Pt should decrease in the range of about 2.125% in the first 5 μ m of depth from the substrate. (if the Pt% follows the integration method of measuring the percentage of Pt and Al in the substrate surface disclosed in Col. 5 lines 7-47) The content of Pt in the first 5 μ m of depth in the substrate should be about 42.875% (with 2.125% Pt lost by the 5 μ m depth).

By the disclosure of Schaeffer, the limitation of claim 40 is considered to be obvious to a person of ordinary skill in the art at the time of the invention. A person of ordinary skill in the art would consider the disclosure of "about 45% Pt" in Schaeffer to be so substantially close to the claimed 40% that there would be no patentable distinction between the prior art of Rickerby and the claimed invention. The claim of obviousness is considered to be substantiated by the disclosure of Schaeffer which indicates that the Pt wt% inside 5 μ m of depth from the top of the substrate would drop to 42.875 wt % Pt, which is considered to be substantially identical to the claimed 40 wt% Pt in claim 40.

It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. In re Best, 195 USPQ 430, 433 (CCPA 1977), In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The **prima facie** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. In re Best, 195 USPQ 430, 433 (CCPA 1977).

Since there is no discernable difference in the method of making the claimed invention from the disclosure of Schaeffer, the claim limitations are considered to be obvious to a person of ordinary skill in the art at the time of the invention.

Considering claim 47, Schaeffer discloses that the proportion of the aluminum is relative to the proportion of nickel in the surface region. There are higher aluminum values closer to the surface of the substrate, while the nickel values increase the further away you are from the surface of the substrate. Therefore, the aluminum and nickel concentrations are considered proportional depending upon the distance away from the surface of the substrate. (Col. 5 lines 7-20)

Considering claims 51-53 and 59, Schaeffer discloses that a platinum layer is diffused on to the surface of the substrate. Since Pt is the only item disclosed to be deposited on the substrate in column 4 lines 34-45, then deposition is considered to be exclusively Pt. While the final product of Schaeffer may disclose an aluminum coating on the exterior of the Pt enriched coating, the intermediate product, where the Pt

Art Unit: 1794

enriched layer is added and diffused into the nickel based substrate surface does not have an aluminized layer. Since this aluminum layer has not formed until later in the process of manufacture, the article as claimed by the Applicant is considered to exist with no aluminum layer and therefore no aluminized layer. (Col. 4 lines 46-56)

Claims Allowable on the Prior Art of Record

The claims listed below are considered to be allowable over the prior art of record, however they are still subject to 35 U.S.C. 112(1) rejection.

Regarding claims 41-44, these claims contain ranges of platinum weight percentages that are outside the prior art of record due to their lower percentage of platinum in a depth of 0-5 μ m.

Regarding claim 45, neither Rickerby nor Schaeffer can be construed to have a weight percentage of 40 wt% platinum at the surface of the substrate or at 0 μ m of depth into the substrate.

Regarding claim 55, neither Rickerby nor Schaeffer can be construed to have an average content of 5-17.99% over the overall composition since they both begin with much greater amounts of platinum in their measured surface regions.

Regarding claim 60, the prior art of record does not utilize a dressing technique nor does it utilize dressing materials.

Response to Arguments

Applicant's arguments with respect to claims 40-61 have been considered but are moot in view of the new ground(s) of rejection. While the arguments did bring up some good points, the prior non-final office action sent on 6/26/2008 was not considered to

Art Unit: 1794

completely address all of the features of the claimed invention. Therefore, the current action has added claim rejections and prior art to properly address the current claim limitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GORDON R. BALDWIN whose telephone number is (571)272-5166. The examiner can normally be reached on M-F 7:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GRB
/Gordon R Baldwin/
Examiner, Art Unit 1794